Incorporation of Photobiomodulation Therapy Into a Therapeutic Exercise Program for Knee Osteoarthritis: A Placebo-Controlled, Randomized, Clinical Trial

Cid A. F. de Paula Gomes, PT, PhD,[1]_ Ernesto C. P. Leal-Junior, PT, PhD,[2] Almir V. Dibai-Filho, PT, PhD,[3]
Adriano R. de Oliveira, PT, PhD,[1] Andr_e S. Bley, PT,[4] Daniela A. Biasotto-Gonzalez, PT, PhD,[1]
and Paulo de Tarso Camillo de Carvalho, PT, PhD
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[1]Department of Physical Therapy, Nove de Julho University, S~ao Paulo, SP, Brazil
[2]Laboratory of Phototherapy in Sports and Exercise, Postgraduate Program in Biophotonics Applied to Health Sciences, Nove de Julho University, S~ao Paulo, SP, Brazil
[3]Department of Physical Education, Federal University of Maranh~ao, S~ao Lu_ıs, MA, Brazil
[4]Department of Physical Therapy, City of S~ao Paulo University, S~ao Paulo, SP, Brazil

Objective: To investigate the clinical effects of incorporation of phototherapy in a therapeutic exercise program for individuals with knee osteoarthritis (OA) when compared to a group that received exercise alone and to a group that received exercise + placebo phototherapy.

Materials and Methods: This is a randomized, blinded and placebo-controlled trial. Thus, sixty male and female individuals aged 40–80 years with knee pain in the previous 6 months participated of the study, with diagnosis of unilateral knee OA based on the criteria established by the American College of Rheumatology and radiographic confirmation and Grades 2 or 3 of the Kellgren-Lawrence Classification. The individuals were equally divided in the groups exercise alone, exercise + active phototherapy (nine-diode cluster device: one 905nm super-pulsed diode laser, four 875nm LED and four 640nm LED; energy per quadrant: 7.85 J; total energy: 23.55 J per session), or Exercise + placebo phototherapy. Treatments were performed twice a week for 5 consecutive weeks. Patients were evaluated before and after the sessions of treatment. The outcome measures were: Western Ontario and McMaster University Osteoarthritis Index (WOMAC), Lower Extremity Functional Scale (LEFS), Numerical Rating Pain Scale (NRPS), pressure pain threshold (PPT) in two points of knee, muscle strength, and the Functional Reach Test (FRT).

Results: Exercise + active phototherapy was significantly more effective than exercise alone (mean difference [MD]¼2.75, 95% confidence interval [CI]¼3.17 to 2.32) and exercise + placebo phototherapy (MD¼2.38, 95% CI¼2.79 to 1.96) only with regard to the NRPS, considering minimal clinically important difference. No clinical significant results were found for function, the pressure pain threshold, muscle strength or balance.
Conclusions: The combination of phototherapy and an exercise program is effective at reducing pain intensity among individuals with knee osteoarthritis than exercise alone or exercise + placebo phototherapy in a short-term protocol. Lasers
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